

ABSTRACT

An improved method and block transform for image or video encoding and decoding, wherein transformation and inverse transformation matrixes are defined such that computational complexity is significantly reduced when encoding and decoding. For example, in the two-dimensional inverse transformation of de-quantized transform coefficients into output pixel information during decoding, only four additions plus one shift operation are needed, per co-efficient transformation, all in sixteen-bit arithmetic. Transformations provide correct results because quantization during encoding and de-quantization (sixteen bit) during decoding, via the use of one of three tables selected based on each coefficient's position, have parameter values that already compensate for factors of other transformation multiplications, except for those of a power of two, (e.g., two or one-half), which are performed by a shift operation during the transformation and inverse transformation processes. Computational complexity is significantly reduced with respect to other known transforms without adversely impacting compression or quality.